

AMENDED SPECIFICATION.

This Print is in accordance with the Original Specification as it stands after Amendment (under Section 11 of the Patents, &c., Act, 1883), as required by the decision of the Law Officer of the 27th day of April 1897.

N^o 17,216



A.D. 1896

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COMPLETE SPECIFICATION (AMENDED).

Auscultation Instrument for Rendering Slight Sounds More Audible.

I, AUGUST EVENS of 13 Maulbeerplantage, Kassel in the Empire of Germany, Manufacturer do hereby declare the nature of this invention and in what manner the same is to be performed to be particularly described and ascertained in and by the following statement:—

5 This invention relates to a device for detecting the sound of movements going on in the human body or within any solid substance. The invention consists, substantially in the covering with a membrane of any elastic substance, susceptible to the vibration of sound waves, of the opening of a hollow body, the walls of which are very thin, the said body having an outer casing, so that between the exterior
10 and interior walls there will be a hollow space, which hollow space is made either void of air or to contain only very rarefied air.

If now such an instrument is laid with its membrane against or upon a body within which a sound, however slight, is being produced, the membrane will be affected thereby and made to vibrate in connection with the interior or hollow space which
15 it covers, while the space on the other side of the cavity, which contains only rarefied air or no air at all, is either not affected by such vibration, or participates in it only to a very small extent. The vibration of the membrane may be made audible by any suitable means, as may be preferred, for example by a microphone, or a transmission of the air-vibrations proceeding from the membrane.

20 A device of the kind above described is represented in the accompanying drawing.

Fig. 1 is a top-view of the back or bottom of the instrument.

Fig. 2 a transverse section through the same and

Fig. 3 a side view of the same.

25 The whole device is formed of a hollow light box of small dimensions and having very thin walls. The front side of this box *S* is depressed to form a cavity *e*, the opening of which is covered by a membrane *m*, composed of ebonite, or vulcanite, or same similar substance. The membrane *m* is fastened to the edge of the depression or cavity. Over the membrane *m* is a somewhat thicker plate *p* of the
30 same material, fastened to the box by a ring *d* which is retained by a button *f* engaging in an elbowed groove *f*¹ of the ring. In the middle of this plate *p*, a small hole is cut in which a metal, wood or ebonite rod *h* is screwed or otherwise made secure (see dotted line in Fig. 2). This rod *h* which is made of two sections, when not in use, may be secured at the back of the box in the sockets *n*. On the
35 rear side of the box *S* are two openings, the mouths of two pipes *g*, which are connected with the cavity or hollow space *e*. To these pipes *g*, two flexible tubes *k* can be attached. The space between the walls and the outer casing of the box *S* is to be as void of air as possible, or the air must be rarefied.

[Price 8d.]

Evens's Auscultation Instrument for Rendering Slight Sounds More Audible.

When the instrument above described is applied to any solid body, either by means of the rod *h* or the ebonite plate *p* touching it, the vibrations caused by any sound produced in the body to which it is so applied will be communicated, by contact, to the membrane *m*, whilst the space between the wall and outer casing of the box *S* will remain more or less unaffected and the more void of air the box 5 is the less will be the vibration transmitted to the interior thereof. Consequently the sound-wave or vibration reaching the membrane *m* will be much greater than any that can reach the interior of the box *S* that is to say the space between the two wall and casing. The vibrations communicated to the membrane *m* produce great undulations within the hollow space or cavity *e*, occasioning 10 distinct vibrations which are conveyed to the ears by the flexible tubes *k*, attached to the pipes *g*. The vibrations can also be conveyed from the membrane *m* by a microphone. *l* is a suspension-ring serving at the same time as a handle.

Having now particularly described and ascertained the nature of my said inven- 15 tion and in what manner the same is to be performed, I am aware that similar instruments have been made particularly under Letters Patent N^o 10223 of 1895 in which a body of relatively large mass has been placed behind the diaphragm and my invention is limited to the use of a hollow space or cavity as described instead of such massive body. I declare that what I claim is:— 20

(1) A device for making slight sounds distinctly audible and distinguished by the covering with a membrane, easily susceptible to vibration, of a hollow space or cavity, the walls of which, on the other side, is surrounded by a space in which there is either no air or only very rarefied air, so that the membrane vibrates in connection with the interior of the hollow space which it covers and 25 the vibrations, or sound-waves, are conveyed through flexible tubes, or otherwise, to the ear.

(2) A device, as described in Claim 1, distinguished by a box *S*, either void of air or containing it only in a rarefied form, which box has a hollow space or cavity *e* on one side of it, covered over by a membrane *m* stretched across it, 30 which hollow space has, proceeding from it, the pipes *g* for the reception of the hearing-tubes *k*.

(3) In the apparatus described in Claims 1 and 2, the combination of a rod *h*, which can be inserted in, or screwed into a plate *p* that serves to protect the membrane *m*. 35

Dated this 4th day of August 1896.

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[This Drawing is a reproduction of the Original on a reduced scale]

Fig. 1.

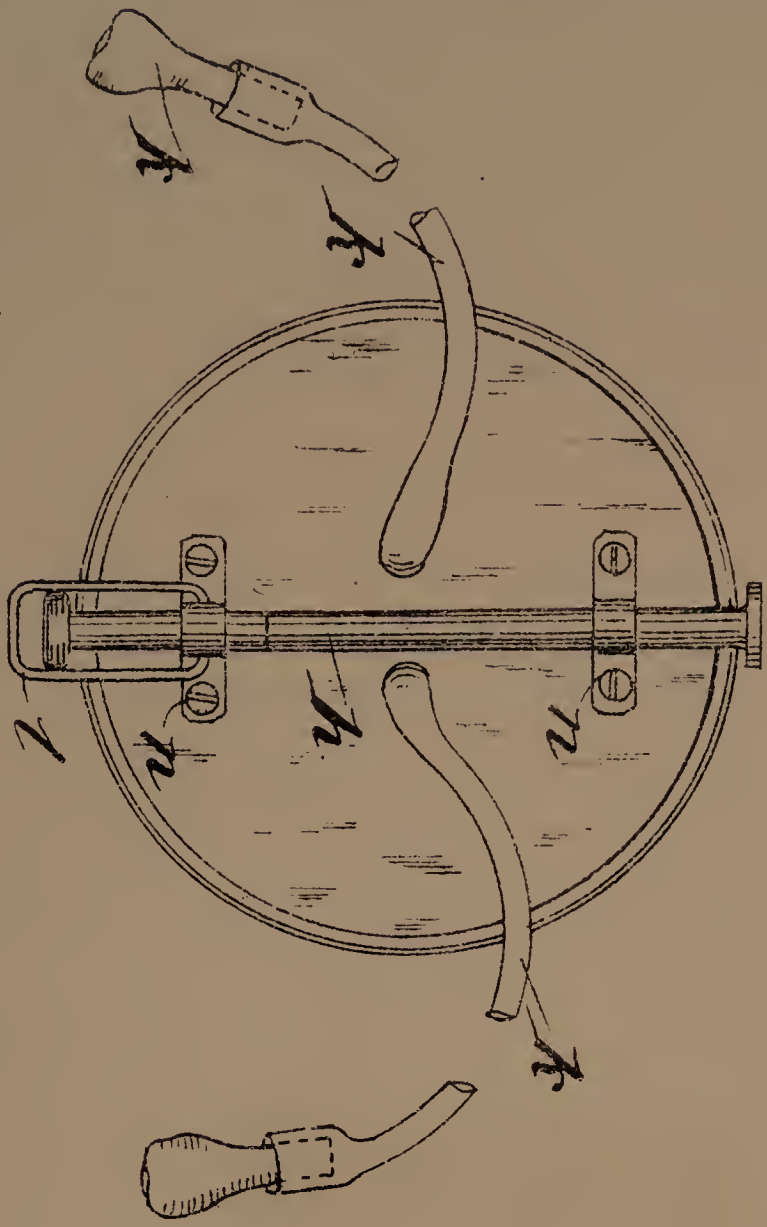


Fig. 2.

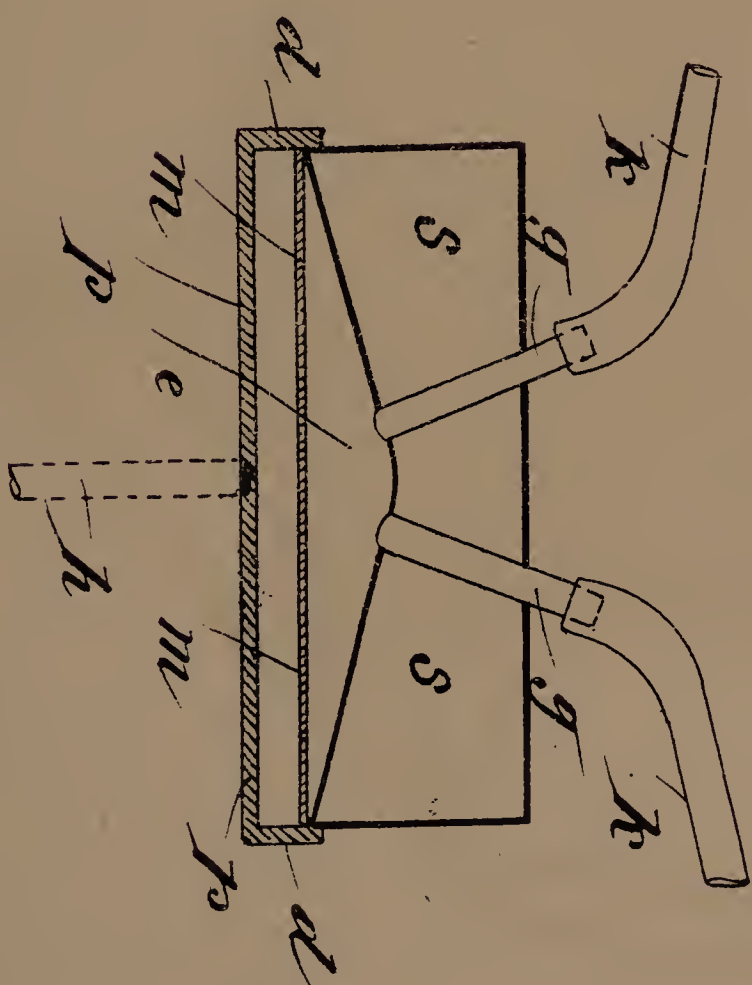


Fig. 3.

